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Collateral nervous damages after cryoballoon pulmonary vein Isolation

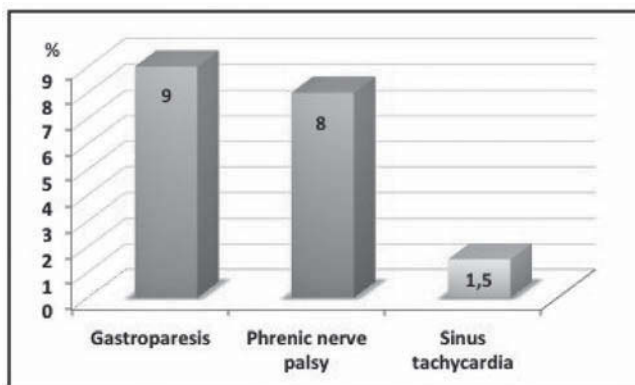
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Background: Various types of complications have been reported after atrial fibrillation (AF) ablation using radiofrequency energy but those have not been well defined when using cryoballoon ablation technique. The objective of this prospective study was to assess types, incidence and outcome of complications after cryoballoon pulmonary venous isolation (PVI) for AF.

Methods: This prospective monocentric study included 66 FA consecutive patients (39 males, age 57 ± 11 years) who underwent cryoballoon PVI for symptomatic paroxysmal AF. Phrenic nerve integrity was assessed by pacing from the superior vena cava during isolation of the right PVs. Before discharge, all patients were subjected to 24-hour Holter electrocardiograms, echocardiography, and esophagogastroduodenoscopy (EGD). Cardiac MRI was scheduled between 1 and 3 months post-procedure. At a mean follow up of 3.7 ± 1.7 months after ablation, patients underwent clinical review and 24 hour Holter electrocardiograms.

Results: The mean number of balloon cryoapplications was 10.0 ± 2.1 per patient and 2.5 ± 1.0 per vein. A 28 mm cryoballoon was used in 49 patients (74%) and a 23 mm cryoballoon in the 17 remaining patients (26%). Nine patients experienced complications attributed to collateral nervous damage (14%): Asymptomatic gastroparesis was observed in 6 pts (9%), transient phrenic nerve palsy (PNP) in 5 (8%), and symptomatic inappropriate sinus tachycardia requiring beta blocker treatment in 1 (1.5%). Neither cryoballoon related-esophageal ulceration nor PV stenosis was observed.

Conclusion: Gastroparesis, PNP and sinus tachycardia could be observed in a significant number of cases after cryoballoon ablation of AF. These complications are likely due to cryo-induced damages of nervous structures surrounding the heart.



Nervous complications after cryoballoon ablation of AF (%)

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Remote magnetic navigation in catheter ablation of persistent atrial fibrillation

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Introduction: Efficacy of magnetic navigation for ablation of paroxysmal atrial fibrillation (AF) has been shown. However data are sparse in patients (pts) with persistent AF.

Aims: We report our experience using Magnetic Navigation System (MNS) (Niobe, Stereotaxis) for catheter ablation of persistent AF.

Methods: Nineteen consecutive symptomatic pts (18 male, age 60.4 ± 1.9 y) with drug-resistant AF underwent ablation with an irrigated tip catheter, in combination with a three dimensional electroanatomical mapping system (Carto RMT). Ablation strategy consisted in wide area circumferential pulmonary vein (PV) ablation with validation for electrical PV disconnection by a circular mapping catheter, followed by complex fractionated atrial electrograms (CFAE) ablation, linear lesions and non PV foci ablation as required. After discharge, pts were scheduled for repeated visits, ECGs and holter recordings at 3 and 6 months (mth).

Results: AF history was 5.5 y and mean duration of the ongoing AF episode was 11 mth. Median left atrial (LA) size was 48.5 mm (28 cm²). All pts underwent successful PV isolation, 74% linear lesions (LA roof line and/or mitral isthmus line), 79% CFAE ablation and 28% non PV foci ablation. Procedure duration was 215 ± 50 min, fluoroscopy time 13 ± 5 min (dose 849 ± 534 mGy) and radiofrequency delivery duration 30 ± 12 min. There was no major complication. At 3 mth follow-up freedom from documented AF was achieved in 35% of pts. After 1.8 procedures/pt and a median 6 mths follow-up, 14 (73,7%) of 19 pts were in sinus rhythm.

Conclusions: Catheter ablation of persistent AF is effective and can be safely performed using MNS. Efficacy is comparable to that reported with the classic manual technique. Operator radioprotection and comfort are major advantages in this type of lengthy procedure.

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Predictive value of sleep apnea syndrome on efficacy of atrial fibrillation ablation (3A study)

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Background: The association of atrial fibrillation (AF) and sleep apnea syndrome (SAS) is well established. The aim of this prospective study was to estimate the relation between presence of SAS and outcome of first AF ablation.

Methods and results: 49 patients (Pts) with symptomatic drug resistant AF (71% paroxysmal) were included prospectively. All underwent clinical evaluation, Berlin Questionnaire (BQ), transthoracic echocardiogram, and overnight polygraphic study (OPS) before pulmonary vein isolation (with possible lines/defragmentation in persistent forms). SAS were classified according to the apnea-hypopnea index (AHI, significant if >15). Follow-up consisted of 3 months (M) visits and 24 h Holter at M6. Pts with AHI >15 underwent a new OPS at M6. Any episode of AF or flutter >30 seconds was considered a recurrence. OPS showed SAS in 12 pts (25%, 6 obstructive). Seventeen pts had a high risk by BQ (42,8%). In SAS group, age (65.7 vs 60.7 , $p=0.01$) body mass index (27.3 vs 25.5 , $p=0.04$) and LA diameter (45 vs 41 mm, $p=0.019$) were higher whereas ejection fraction was lower (49% vs 63% , $p=0.001$). At M6, 29% of the SAS group are AF free versus 78% in the other group. With multivariate analysis, SAS was the only independent predictor of ablation failure (OR=7.33).

Conclusion: SAS was a powerful independent predictor for first AF ablation failure.

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Prevalence of atrial fibrillation in an elderly contemporary French cohort: the three city study-COVADIS

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Background: Atrial fibrillation (AF) is a major public health concern worldwide. Prior studies have established that key risk factors for the development of AF include, age, hypertension, coronary artery disease (CAD), heart failure,